No. 9400264

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Board of Regents, University of Nebraska and
Agricultural Research Service, USDA

WHEREAS, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Alliance'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 28th day of June in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

Marsha A. Stanton
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and edition date on all reproductions.* OMB APPROVED NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(INSTRUCTIONS ON REVERSE)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)
Board of Regents, University of Nebraska and Agricultural Research Service, USDA

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
NE88595

3. VARIETY NAME
Alliance

4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)
Lincoln, NE 68583-0745

Washington, D.C. 20250

5. PHONE (include area code)
402-472-3906

202-720-3656

FOR OFFICIAL USE ONLY

PVPO NUMBER
9400264

FILING Date: Aug. 31, 1994
Time: ☑ A.M. ☐ P.M.

FEES RECEIVED Filing and Examination Fee: $ 2,325.00
Date: Aug. 24, 1994
Certificate Fee: $ 300.00
Date: 2/5/96

6. GENUS AND SPECIES NAME
Triticum aestivum L.

7. FAMILY NAME *(Botanical)*
Graminae

8. CROP KIND NAME *(Common Name)*
Hard Red Winter Wheat

9. DATE OF DETERMINATION
July, 1987

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)
Corporation and U.S. Government Agency

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Nebraska and District of Columbia

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. D.W. Nelson, Dean and Director
Agricultural Research Division, IANR-UNL
Lincoln, NE 68583-0704

Telephone: 402-472-2045

Dr. R.D. Plowman, Administrator
USDA, ARS, OA Administration Bldg., Room 302-A
Washington, D.C. 20250

PHONE (include area code): 202-720-3656

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow* **INSTRUCTIONS** *on reverse)*

- a. ☒ Exhibit A, Origin and Breeding History of the Variety
- b. ☒ Exhibit B, Novelty Statement
- c. ☒ Exhibit C, Objective Description of Variety
- d. ☒ Exhibit D, Additional Description of Variety
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership
- f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
- g. ☒ Filing and Examination Fee ($2,325) made payable to "Treasurer of the United States"

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act)* ☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____).
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) United States, ~~September, 1992~~ December 1993 NDA per letter 10 Jan 1996
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE
Daniel D Nelson	Dean and Director Agr. Research Division	8/23/94
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE
R D Plowman	Administrator for ARS-USDA	8/16/94

SD-470 (06-93) *Editions of Forms LS-470 (3/86) and CSSD-470 (5/89) are to be destroyed.*

CONTINUED ON REVERSE

1

9400264

'Alliance' (P. I. 573096) Hard Red Winter Wheat Application

Exhibit A. Origin and Breeding History:

Alliance was selected from the cross 'Arkan'/'Colt'//'Chisholm' sib which was made in 1982 by Dr. J. W. Schmidt. Alliance is an F_3-derived line that was identified in 1988 and tested as NE88595. Alliance was released primarily because of its high yield potential and resistance to diseases and insects in its area of adaptation. The F_1 generation was grown in the greenhouse in 1983. The F_2 and F_3 generations were grown in bulk at Mead, Nebraska in 1984 and 1985 respectively. Random heads were chosen from the F_3 bulk and planted as head rows which where harvested in 1986. The F_3-derived F_5 family was harvested as a single observation plot in 1987. In 1988 (the date of determination), Alliance was grown in six locations in unreplicated trials in Nebraska. Alliance was identified in these trials as NE88595. It has been tested in replicated trials from 1989 to present. In addition, it has been tested in the USDA Southern Regional Performance Nursery in 1991 and 1992. The criteria for selection were a) adequate winterhardiness for propagation in Nebraska, b) resistance to *Puccinia graminis* (the causal organism of stem rust), c) agronomic performance equal or superior to commonly grown varieties, and d) acceptable end-use quality (in this case for bread making). Alliance was named and released in January, 1993 by the Nebraska Agricultural Experiment Station, the South Dakota Agricultural Experiment Station, and the Agricultural Research Service, U.S. Department of Agriculture. The initial allocation of Foundation seed of the experimental line (NE88595) to certified growers was made in September, 1993. Alliance was named and released in December, 1993 by the Nebraska Agricultural Experiment Station, the South Dakota Experiment Station, and the Agricultural Research Service, U.S. Department of Agriculture. The first public sale of certified seed was August, 1994.

Alliance will be maintained by the Nebraska Agricultural Experiment Station with the following classes: Breeder, Foundation, Registered, and Certified. Breeder seed will be maintained by roguing Breeder Seed fields. The U.S. Department of Agriculture will not have seed for distribution.

Alliance appears stable and uniform over six generations of selfing and during seed increase. Less than 0.1 percent of the plants were rogued from Foundation and Breeder Seed Fields. It is expected that less that 0.2% (1:500) variant plants (not more than 1:1000 taller plants, 3 to 7 cm taller; not more than 1 red chaffed plant : 2000 white chaffed plant; not more than 1 black chaffed and black awned plant : 10000 white chaffed and awned plants) may be encountered in subsequent generations.

Exhibit B. Novelty Statement

Alliance is most similar to the hard red winter wheat cultivar Rawhide, but it can be distinguished by the following characteristics.

1. Alliance has a glabrous leaf surface while Rawhide has a pubescent leaf surface.

2. In data provided by Dr. Don McVey of the USDA Cereal Rust laboratory, Alliance contains Sr17 which is no longer effective and other unidentified genes that are effective in reducing stem rust. Rawhide contains genes Sr17, Sr24, and is heterogeneous for Sr31 (indicating the presence of the 1B/1R translocation) for stem rust resistance. The presence (in some plants of Rawhide) or absence (in all plants of Alliance) of the 1B/1R translocation is easily determined biochemically in seed through the use of SDS-PAGE gels or ELISA using antibodies and cytologically with various DNA probes.

3. Alliance has a longer and less dense spike; a shorter beak, and longer seed than Rawhide. Data was taken on randomly collected heads from a replicated trials in Nebraska. Variances are homogeneous for all measured traits, hence can be used in T-tests (p=0.05) for significance).

	Alliance	Rawhide
Spike		
length*	7.1 cm ± 0.2	5.9 ± 0.2
width	13.5 mm ± 0.3	12.8 ± 0.4
density*	38.4 mm ± 0.7	30.3 ± 1.2
Beak Length*	2.3 mm ± 0.2	4.2 ± 0.2
Seed		
Length*	6.9 mm ± 0.2	6.2 ± 0.2
Width	2.5 mm ± 0.2	2.6 ± 0.2

* Differences between Alliance and Rawhide are statistically different using T-tests (p=0.05).

Exhibit C. See Attached Sheet

Exhibit D. Additional Description of the Variety:

Alliance is an awned, white glumed cultivar. The foliage is green, with a waxy bloom at anthesis. The spike is middense and tapering. The glume is short to midlong and narrow to midwide. The glume shoulder is narrow and oblique to square. The beak is very short to short. Kernels are red colored, hard textured, and ovate. The kernel has no collar, rounded cheeks, midsize germ, large brush of medium length, and a narrow and shallow crease.

Alliance has been tested in Nebraska yield nurseries starting in 1989, and in the Southern Regional Performance Nursery starting in 1991 and the Northern Regional Performance Nursery in 1993. In four years of testing (18 location-years) in the Nebraska Intrastate Nursery, Alliance (3070 kg/ha) was 5%, 7%, 8%, and 17% higher yielding than 'Redland', 'Vista', 'Arapahoe', and 'TAM107' respectively. In two years of testing (1992 and 1993) in the Nebraska Fall Sown Cereal Variety Trials (22 location-years), Alliance (3720 kg/ha) was 8% higher yielding than Arapahoe and TAM107, and 4% higher yielding than Redland and Vista. In two years of testing in the Southern Regional Performance Nursery (53 location-years), Alliance (3510 kg/ha) was 4% lower yielding than TAM107. However, in the northern high plains region (southwestern and western Nebraska, northwestern Kansas, and northeastern Colorado; 8 location-years), Alliance (3290 kg/ha) was 8% higher yielding than TAM107. The recommended growing area of Alliance is western Nebraska and southwestern South Dakota. Alliance is a semidwarf cultivar that is 4 cm taller than TAM107 and 12 cm shorter than 'Scout 66', a conventional height wheat. Alliance has a short coleoptile (66 mm) compared to TAM107 (80 mm) and Scout 66 (105 mm). Due to the short coleoptile of Alliance, care must be taken to avoid planting it too deep in dry soils to prevent seedling emergence difficulties.

The grain volume weight of Alliance is similar to Arapahoe, less than Siouxland, and superior to Redland. The winterhardiness of Alliance is adequate for Nebraska growing conditions, superior to 'Vona', 'TAM 200', and 'Rawhide', and similar to Scout 66. Alliance is a medium-early cultivar, 1.5 d later than TAM107 and 1.5 d earlier than Arapahoe and Redland. It is similar in plant height to Arapahoe and Redland, taller than Vista, and has moderate straw strength. The straw strength of Alliance is less than Redland, Siouxland, TAM107, 'Abilene', and 'Thunderbird'.

Alliance has exhibited moderate resistance to stem rust (incited by Puccinia graminis

Pers. : Pers.) and carries Sr17 which is no longer effective and other genes which are effective. In field tests by the USDA Cereal Rust Laboratory, the adult plant reaction of Alliance to stem rust is less infection than TAM 107 which is adequate for Nebraska conditions. Alliance has a heterogeneous reaction to the Great Plains Biotype of Hessian fly (Mayetiola destructor Say) which may indicate it contains the Marquillo-Kawvale gene for resistance or is heterogeneous for H3 from Arkan. Alliance is susceptible to leaf rust (incited by Puccinia recondita Roberge ex Desmaz.) and soilborne wheat mosaic virus. Its reaction to wheat streak mosaic virus needs further testing, however, in the greenhouse it appears to be less susceptible than many Nebraska released cultivars, similar to Redland, and less tolerant than Vista. When crown rotting diseases (incited by Bipolaris (syn. Helminthosporium) spp. and Fusarium graminearum spp.) are present, Alliance appears to have more tolerance than the majority of Nebraska cultivars.

The milling and baking properties of Alliance were determined by the Nebraska Wheat Quality Laboratory using composite samples from five years of testing with Arapahoe and Scout 66 as check cultivars. The average wheat and flour protein content of Alliance is lower than Arapahoe and similar to Scout 66. The dough mixing properties were similar to Arapahoe and stronger than Scout 66. While the baking absorption of Alliance was less than Arapahoe and Scout 66, average loaf volumes were greater than the two check cultivars. The external appearance and internal attributes of the baked bread loaf indicated generally acceptable quality characteristics.

Exhibit E. Statement of the Basis of the Applicant's Ownership

The University of Nebraska and the USDA/ARS are the applicants for protection in the case of Alliance hard red winter wheat being the variety for which Plant Variety Protection is hereby sought was developed by Drs. P. S. Baenziger, B. Moreno-Sevilla, J. W. Schmidt, and D. Shelton, employees of the University of Nebraska, and C. J. Peterson, an employee of USDA-ARS. By agreement between employees of the University of Nebraska and by agreement between USDA-ARS and the University of Nebraska, all rights to any invention, discovery, or development made by employees while employed by the University of Nebraska or by USDA-ARS employees stationed at the University of Nebraska, are jointly assigned to the University of Nebraska and USDA-ARS, with no rights of any kind to Alliance being retained by the employees.

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Board of Regents, University of Nebraska and USDA-ARS

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Lincoln, NE 68583-0745 Washington, D.C. 20250

FOR OFFICIAL USE ONLY

PVPO NUMBER
9400264

VARIETY NAME OR TEMPORARY DESIGNATION
Alliance (NE88595)

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (*e.g.* [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM ~~EMERGENCE~~ TO: Heading.

[1][2][9] ~~FIRST FLOWERING~~ Heading [ ][ ][ ] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[ ][1] NO. OF DAYS *EARLIER* THAN ..... [7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[ ][2] NO. OF DAYS *LATER* THAN ..... [8] 4 = LEMHI 5 = NUGAINES 6 = LEEDS 7=ARAPAHOE 8=TAM 107

5. PLANT HEIGHT (*From soil level to top of head*):

[0][8][2] CM. HIGH

[ ][4] CM. TALLER THAN ..... [8] 7=ARAPAHOE *+TAM 107

[1][2] CM. SHORTER THAN ..... [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES (*Originating from node above ground*)

[ ][ ] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[0][9] MM. LEAF WIDTH (*First leaf below flag leaf*)

[2][1] CM. LEAF LENGTH (*First leaf below flag leaf*):

9400264

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=Middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[7][.1] CM. LENGTH [1][4] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[1] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE Germinate

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[ ] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[6][.9] MM. LENGTH [2][.5] MM. WIDTH [25] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=moderately resistant

[3] STEM RUST (Races) _____ [1] LEAF RUST (Races) _____ [1] STRIPE RUST (NRDN-93) [0] LOOSE SMUT

[0] POWDERY MILDEW [0] BUNT [1] OTHER (Specify) Soil Borne Mosaic Virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3=moderately resistant

[0] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES: [3] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Rawhide	Seed size	Colt
Leaf size	Rawhide	Seed shape	Colt
Leaf color	Arapahoe	Coleoptile elongation	Abilene
Leaf carriage	Rawhide	Seedling pigmentation	Chisholm

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)